INTEGUMENTARY

Integumentary System

- skin
  - epidermis: epithelial layers
  - dermis: connective tissue layer

under the skin
- hypodermis (subcutaneous)

other stuff
- accessory structures
  - hair
  - nails
  - glands
  - nerve endings
  - blood vessels

Functions

Protection
- barrier: foreign body, water gain/loss, dirt
- fight infections: WBC, pH, antibiotics

Body Temperature
- sweat
- adipose

Sensation
- information from environment

Vitamin D production

epidermis

keratinized stratified squamous epithelium

layers:
- stratum corneum
- stratum granulosum
- stratum spinosum
- stratum basale

epidermis

stratum basale = basal layer = stratum germinativum

Merkel cells

melanocytes

basal cells

stratum spinosum
keratinocytes
Langerhan’s cells

stratum granulosum
dying keratinocytes

stratum corneum
dead cells
thick keratin
waterproof

thick skin
- palm, plantar areas
- thick stratum corneum + keratin

thin skin
- thin stratum corneum
Cancer
- oma tumor, mass
carcinoma cancerous tumor of epithelial tissue
sarcoma cancerous tumor of connective tissue
basal cell carcinoma
squamous cell carcinoma
malignant melanoma

dermis
connective tissue layer
papillary layer areolar c.t.
dermal papillae
reticular layer dense irregular c.t.
  blood supply 5% of body’s blood
glands
  temperature control
  nerves

hypodermis
= subcutaneous layer = superficial fascia
adipose + areolar c.t.
insulation
  cushion
  connects skin to underlying tissues and muscle

hair
hair hard keratin
dead keratinocytes
melanin
function touch
temperature control
medulla inner core of keratinocytes
cortex outer layers of keratinocytes
root below skin
shaft above skin

hair follicle epidermal tissue
hair follicle receptors touch neurons
arrector pili muscle

sebaceous glands
secrete sebum (oil) prevents drying of skin and hair
most secrete into hair follicle
covers entire body, except palms and soles  WHY?

sweat glands = sudoriferous glands
sweat to decrease body temperature
  99% water from blood
  urea waste product of AA
  kills bacteria
secrete through ducts to skin surface
2 types
  eccrine most body areas
  apocrine axilla, genital area
modified sweat glands

ceruminous glands produce cerumen ear canal
mammary glands produce milk

nail

hard, clear keratin

root under skin, proximal
nail bed epidermis
nail matrix basal cells, produce keratin
eponychium = cuticle - proximal fold
lunule white area extension of matrix (avascular)

sensations info about the environment

pain

temperature

touch

pressure

types of sensory cells:
free nerve ending
encapsulated nerve endings
hair follicle receptors
Merkel cells

blood vessels

body temperature control
increase blood flow (vasodilate) heat loss
decrease blood flow (vasoconstrict) conserve heat

Burns

damage from heat, electricity, radiation, chemicals
risks: dehydration
circulatory shock
infection

1st degree burn:
superficial layers of epidermis
vasodilation mild swelling
redness

2nd degree burn:
entire epidermis
vasodilation blisters

3rd degree burn:
through dermis
loss of protective function
loss of sensation
infection - septicemia
dehydration - circulatory shock